



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/802,808	03/18/2004	Makoto Momota	Q80433	5096

23373 7590 07/14/2006
SUGHRUE MION, PLLC
2100 PENNSYLVANIA AVENUE, N.W.
SUITE 800
WASHINGTON, DC 20037

EXAMINER

GILLIAM, BARBARA LEE

ART UNIT PAPER NUMBER

1752

DATE MAILED: 07/14/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

6

Office Action Summary	Application No. 10/802,808	Applicant(s) MOMOTA ET AL.	
	Examiner Barbara L. Gilliam	Art Unit 1752	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 April 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-3 and 6-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-3 and 6-17 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Amendment

1. The amendment filed April 24, 2006 has been entered and fully considered.
2. Claims 1-3, 6-17 are present.

Claim Rejections - 35 USC § 102

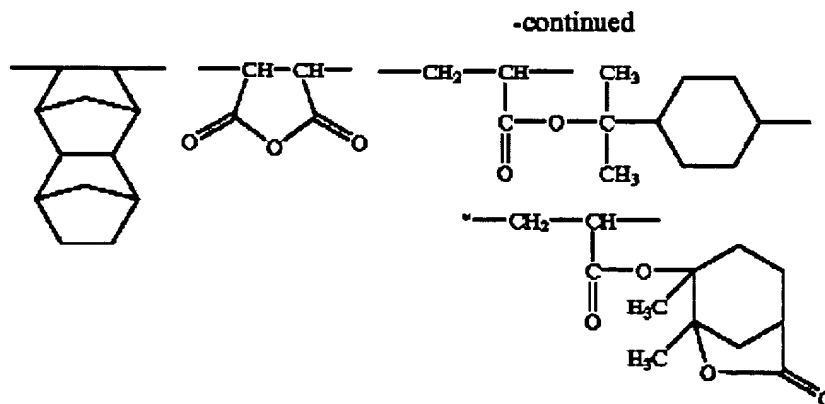
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

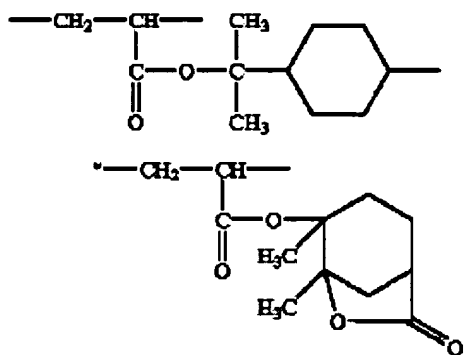
4. Claims 1, 8, 11-17 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Kodama et al. (US 2003/0017415 A1).

a. Kodama et al. exemplifies in Examples IV-27 and IV-29 resist compositions, which anticipate the presently claimed resist composition. Specifically the resist composition of IV-27 contains the following resin



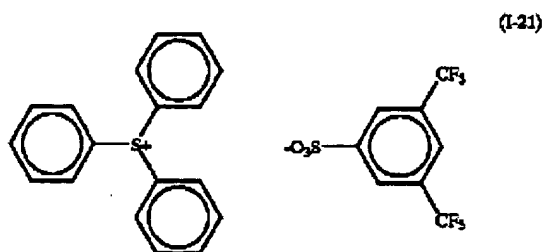
wherein

Art Unit: 1752

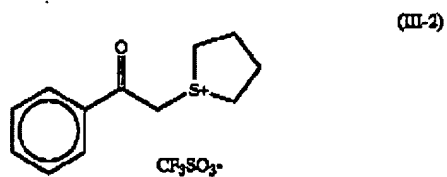


are used in amounts of 31 and 26 mol % (57

mol % derived from acrylic acid ester), in addition to the triarylsulfonium salt



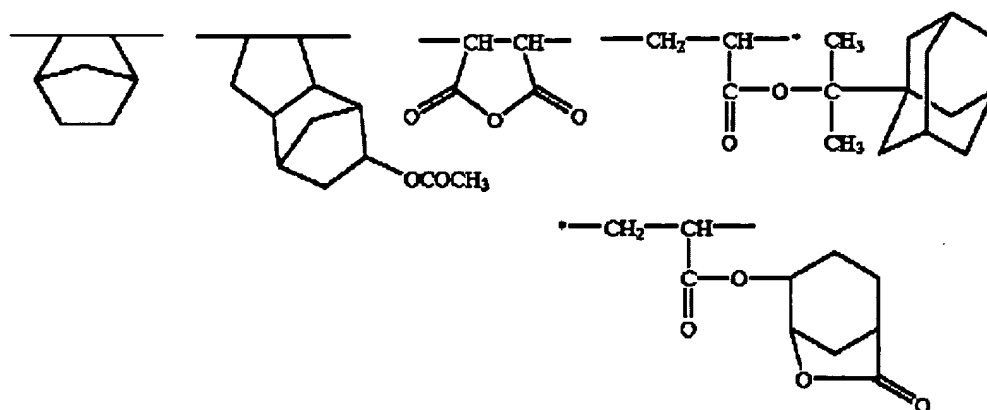
and the phenylsulfonium salt



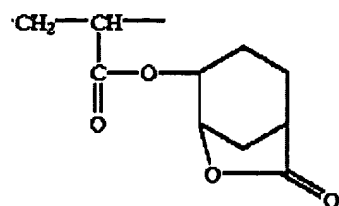
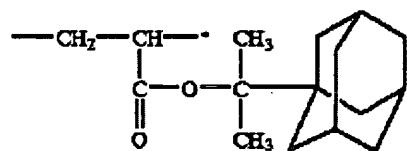
with organic solvents 2-heptanone, propylene

glycol monomethyl ether and ethylene carbonate, bis(1,2,2,6,6-pentamethyl-4-piperidyl)sebacate as the amine and polysiloxane polymer DP-341 as the surfactant. In Example IV-29, the following resin is used

Art Unit: 1752

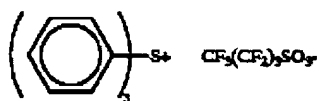


wherein

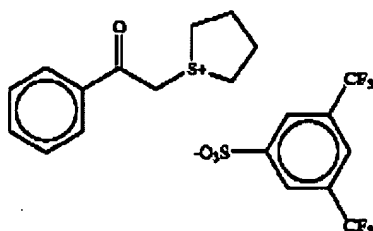


are used in respective amounts of 33 and 19 mol % (52 mol

% derived from acrylic acid ester), in addition to the triarylsulfonium salt



and the phenylsulfonium salt



with organic solvents 2-heptanone and propylene glycol monomethyl ether, bis(1,2,2,6,6-pentamethyl-4-piperidyl)sebacate as the amine and MEGAFAC F176 as the surfactant (fluorine based). See Tables 6, 29 and 30. Each of the cited resists were coated onto a silicon wafer, dried, exposed with an ArF excimer laser (193 nm), heat treated, developed and rinsed with distilled water ([0544]-[0572]).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claim 2-3, 6-7, 9-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kodama et al. (US 2003/0017415 A1).

a. As pointed out in the rejection under 35 USC 102(b), Kodama et al. clearly teach the presently claimed resist composition. In Examples Iv-23 and IV-24, resins 93 and 94 are used respectively. Resin 93 contains a total of 65 mol % of monomers derived from acrylic acid esters and resin 94 contains a total of 62 mol % of monomers

derived from acrylic acid esters. Examples IV-23 and IV-24 do not comprise the required combination of acid generators however based on the overall teachings of Kodama et al., specifically Examples IV-27 and IV-29, it would have been *prima facie* obvious to use a combination of a triarylsulfonium salt and a phenylacylsulfonium as the acid generators with a reasonable expectation of obtaining similar results. With respect to the cyclic ketone organic solvent, Kodama et al. clearly teaches γ -butyrolactone in paragraphs [0324], [0327], [0329], and [0334] as a preferred solvent. Therefore it would have been *prima facie* obvious to use any of the preferred solvents, including γ -butyrolactone, and to optimize the amount of said solvent. *In re Aller*, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955). MPEP 2144.05.

7. Claims 1-3, 6-17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Uetani et al. (US 2001/0044070 A1) in view of Kodama et al. (US 2003/0017415 A1).

a. Uetani exemplifies a resin A1 comprising the repeating units of 2-ethyl-2-adamantyl methacrylate, 3-hydroxy-1-adamantyl methacrylate, and 5-methacryloyloxy-2,6-norbornanecarbolactone (resin synthesis Ex. 1). The monomers were synthesized from (meth)acrylic acid ([0094]-[0097]). Resist composition were prepared by admixing the said resin with an acid generating agent, a quencher ([0115]-[0119]) and a solvent mixture of 57 parts propylene glycol monomethyl ether acetate (PGMEA) and 3 parts γ -butyrolactone ([0126]-[0128]). See also Table 1. The formed composition was coated on a silicon wafer, exposed with an ArF excimer stepper and developed with aqueous

TMAH ([0129]-[0130]). See also resin A2-A6 and AX. It is the examiner's position that 5-methacryloyloxy-2,6-norbornanecarbolactone meets the limitations of claimed formula (VI); 3-hydroxy-1-adamantyl methacrylate meets the limitations of claimed formula (All) and the limitations of claim 8 would have been obvious in view of the 2-ethyl-2-adamantyl methacrylate. Further, PGMEA meets the limitations of a propylene glycol monoalkyl ether carboxylate and γ -butyrolactone meets the limitations of a cyclic ketone. It would have been obvious to optimize the amount of solvents, including γ -butyrolactone. MPEP 2144.05. Uetani et al. do not teach the required acid generator combination however it is the Examiners position the teachings of Uetani et al. are not limited to the acid generators taught therein ([0030]). Therefore it would have been obvious to one of ordinary skill in the art to use any well known acid generator(s) including the preferred combination of Kodama et al., a triarylsulfonium salt and phenacylsulfonium salt ([0110]-[0115]) with reasonable expectation of preventing sensitivity fluctuation ([0116]). Uetani further teaches that the taught composition may also contain various additives such as sensitizers, dissolution inhibitors, and surfactants ([0090]).

Response to Arguments

8. Applicant's arguments filed April 24, 2006 have been fully considered but they are not persuasive.

a. Applicant argued it is impossible to conclude that the present invention, which relates to a resist formulation comprising a resin containing an acrylate monomer

Art Unit: 1752

and a methacrylate monomer in a specified ratio combined with a specific photo-acid generator, further containing a specified solvent in a specific ratio, can be derived from Uetani et al. and Kodama et al. without showing or specifically explaining how the combination of the prior art is in error. Claim 1 only requires the presence of one specific organic solvent. The Examiner maintains the present invention is obvious in view of the prior art combination. Additionally, in response to applicant's argument that Uetani et al. has nothing to do with the prevention of sensitivity fluctuation, the fact that applicant has recognized another advantage which would flow naturally from following the suggestion of the prior art cannot be the basis for patentability when the differences would otherwise be obvious. See *Ex parte Obiaya*, 227 USPQ 58, 60 (Bd. Pat. App. & Inter. 1985).

b. Applicant successfully argued the resin 85 of Kodama et al. However, as pointed out in the new rejection under 35 USC 102(b) and the modified rejection under 35 USC 103(a), the presently claimed resist composition is anticipated and obvious over the teachings of Kodama et al.

c. Claims 6 and 7 stand rejected.

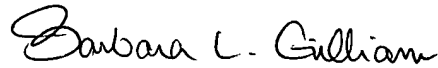
Conclusion

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Barbara L. Gilliam whose telephone number is 39. The examiner can normally be reached on Monday through Thursday, 8:00 AM - 5:30 PM.

Art Unit: 1752

a. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

b. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Barbara L. Gilliam
Primary Examiner
Art Unit 1752

bg
December 20, 2005
1.